



\*\*FILE\*\*ID\*\*COBCVTQD

N 12

The image shows a 16x16 grid of letters, likely representing a game board. The letters are arranged in a specific pattern: 'C' characters form the top and bottom rows; 'O' characters are in the second and 15th rows; 'B' characters are in the 10th and 11th rows; 'V' characters are in the 13th and 14th rows; 'T' characters are in the 16th row; 'Q' characters are in the 12th and 14th rows; 'D' characters are in the 15th and 16th rows; and 'S' characters are in the 11th and 12th rows. The grid is enclosed in a border of 'L' characters. There are also '...' characters at the far right edge.

(2)	49	HISTORY	: Detailed Current Edit History
(3)	60	DECLARATIONS	
(4)	102	COB\$CVTQD_R8	

```
0000 1 .TITLE COBSCVTQD_RB COBOL Convert Quad to Double
0000 2 .IDENT /1-004/ ; File: COBCVTQD.MAR
0000 3
0000 4
0000 5 :*****
0000 6 :*
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0000 27 :*
0000 28 :* FACILITY: COBOL SUPPORT
0000 29 :+
0000 30 :* ABSTRACT:
0000 31 :* This module contains the routine that converts quadword numbers
0000 32 :* to double floating.
0000 33 :*
0000 34 :*
0000 35 :-- 
0000 36 :*
0000 37 :* VERSION: 1
0000 38 :*
0000 39 :* HISTORY:
0000 40 :*
0000 41 :* AUTHOR:
0000 42 :* Marty Jack, 14-Mar-1979
0000 43 :*
0000 44 :* MODIFIED BY:
0000 45 :*
0000 46 :*
0000 47 :*
```

0000 49 .SBTTL HISTORY ; Detailed Current Edit History  
0000 50  
0000 51  
0000 52 : Edit History for Version 1 of COBCVTQD  
0000 53 :  
0000 54 : 1-001 - Original. MLJ 14-Mar-1979  
0000 55 : 1-002 - Make external references explicit. RKR 17-JULY-1979  
0000 56 : 1-003 - Change all references to FOR\$CNV\_IN\_DEFG to OTSSCVT\_T\_D  
0000 57 : RKR 27-SEPT-79  
0000 58 : 1-004 - Cosmetic changes. RKR 18-OCT-79

```
0000 60      .SBTTL DECLARATIONS
0000 61
0000 62
0000 63 : INCLUDE FILES:
0000 64 :
0000 65      $DSCDEF
0000 66
0000 67 :
0000 68 : EXTERNAL SYMBOLS:
0000 69
0000 70      .DSABL GBL      ; Prevent undeclared symbols from being
0000 71                  ; automatically global
0000 72
0000 73      .EXTRN OTSSCVT_T_D ; D, E, F, G Conversion Routine
0000 74
0000 75 :
0000 76
0000 77 :
0000 78 : MACROS:
0000 79 : NONE
0000 80 :
0000 81
0000 82 :
0000 83 : PSECT DECLARATIONS:
00000000 84      .PSECT _COB$CODE      PIC, SHR, LONG, EXE, NOWRT
0000 85
0000 86 :
0000 87 : EQUATED SYMBOLS:
0000 88 : NONE
0000 89 :
0000 90
0000 91 :
0000 92 : OWN STORAGE:
0000 93 :
0000 94 :+
0000 95 : The following constant has the value 2**32. It is used for scaling
0000 96 : the high 32 bits and for compensating for unsigned arithmetic.
0000 97 :-
0000 98 BIAS:      PACKED 4294967296      ; 2**32
0000000A 0006 99 BIAS_DIGITS=10
0006 100 ;
```

6C 29 67 49 29 04

0000000A

0006 102 .SBTTL COB\$CVTQD\_R8  
 0006 103  
 0006 104 :++  
 0006 105 : FUNCTIONAL DESCRIPTION:  
 0006 106 : Converts 64-bit (quadword) numbers to double floating.  
 0006 107 :  
 0006 108 :  
 0006 109 : CALLING SEQUENCE:  
 0006 110 :  
 0006 111 : JSB COB\$CVTQD\_R8 (scale.rl.v, src.rq.r, dst.wd.r)  
 0006 112 :  
 0006 113 : Arguments are passed in R6, R7, and R8.  
 0006 114 :  
 0006 115 : INPUT PARAMETERS:  
 0006 116 :  
 0006 117 : SCALE.rl.v The power of ten by which the internal  
 0006 118 : representation of the source must be  
 0006 119 : multiplied to scale the same as the  
 0006 120 : internal representation of the dest.  
 0006 121 : SRC.rq.r The number to be converted  
 0006 122 :  
 0006 123 : IMPLICIT INPUTS:  
 0006 124 :  
 0006 125 : ALL of the trap bits in the PSL are assumed off.  
 0006 126 :  
 0006 127 : OUTPUT PARAMETERS:  
 0006 128 :  
 0006 129 : DST.wd.r The place to store the converted number  
 0006 130 :  
 0006 131 : IMPLICIT OUTPUTS:  
 0006 132 :  
 0006 133 : NONE  
 0006 134 :  
 0006 135 : FUNCTION VALUE:  
 0006 136 :  
 0006 137 : 1 = SUCCESS, 0 = FAILURE  
 0006 138 :  
 0006 139 : SIDE EFFECTS:  
 0006 140 :  
 0006 141 : Destroys registers R0 through R8.  
 0006 142 :  
 0006 143 :--  
 0006 144 :  
 0006 145 :  
 0006 146 : COB\$CVTQD\_R8:  
 5E 28 C2 0006 147 SUBL2 #40,SP ; Space for temp string and result  
 0009 148 :  
 0009 149 : Convert the quadword input to packed.  
 0009 150 :  
 04 A7 67 01 1F EC 0009 151 CMPV #31,#1,(R7),4(R7) : Is number in longword range?  
 08 AE 13 67 F9 000F 152 BNEQ 11\$ : Br if not to slower code  
 20 11 0016 153 CVTLP (R7),#19,8(SP) : Convert low order longword  
 13 6E 0A 04 A7 F9 0018 154 BRB 13\$ : To common code  
 DF AF 0A 25 001D 155 11\$: CVTLP 4(R7),#10,(SP) : Convert high order longword  
 08 AE 0024 156 MULP #BIAS\_DIGITS,BIAS,#10,(SP),#19,8(SP)  
 0026 157 : Multiply by 2\*\*32

6E 0A 67 F9 0026 158 CVTLP (R7),#10,(SP) ; Convert low order longword  
 06 18 002A 159 BGEQ 12\$ Br if nonnegative  
 6E 0A DD AF 0A 20 002C 160 ADDP4 #BIAS\_DIGITS,BIAS,#10,(SP) ; Correct for signed conversion  
 08 AE 13 6E 0A 20 0032 161  
 0038 162 12\$: ADDP4 #10,(SP),#19,8(SP) ; Sum low and high order parts  
 0038 163  
 0038 164 ; Convert the packed intermediate to leading separate.  
 14 AE 13 08 AE 13 08 0038 165  
 003F 166 13\$: CVTPS #19,8(SP),#19,20(SP) ; Make a separate sign string  
 003F 167  
 003F 168 ; Make a descriptor for the leading separate string.  
 003F 169  
 7E 53 DD 003F 170 PUSHL R3 ; Address = temp string  
 01 90 0041 171 MOVB #DSC\$K\_CLASS\_S,-(SP) ; Class = static  
 7E 0E 90 0044 172 MOVB #DSC\$K\_DTYPE\_T,-(SP) ; Data type = ASCII text  
 7E 14 B0 0047 173 MOVW #20,-(SP) ; Length = 20 bytes  
 004A 174  
 004A 175 ; Now call the conversion routine.  
 004A 176  
 7E 56 CE 004A 177 MNEGL R6,-(SP) ; Scale factor  
 00 DD 004D 178 PUSHL #0 ; Digits in fraction  
 10 AE 9F 004F 179 PUSHAB 16(SP) ; Address of result area  
 0C AE 9F 0052 180 PUSHAB 12(SP) ; Address of descriptor  
 00000000'GF 04 FB 0055 181 CALLS #4,G^OTSSCVT\_T\_D ; Call the routine  
 08 50 E9 005C 182 BLBC R0,15\$ ; Failure, must be overflow  
 68 08 AE 70 005F 183 MOVD 8(SP),(R8) ; Store result  
 50 01 DD 0063 184 MOVL #1,R0 ; Indicate success  
 5E 30 C0 0066 185 14\$: ADDL2 #48,SP ; Delete stack temps  
 05 0069 186 RSB ; Return  
 006A 187  
 006A 188 ; Come here on overflow to store the reserved operand.  
 006A 189  
 68 01 0F 79 006A 190 15\$: ASHQ #15,#1,(R8) ; Store reserved operand  
 50 D4 006E 191 CLRL R0 ; Indicate failure  
 F4 11 0070 192 BRB 14\$ ; Delete stack temps and return  
 0072 193  
 0072 194 ; .END

## COBSCVTQD R8 Symbol table

### COBOL Convert Quad to Double

H 13

15-SEP-1984 23:39:56 VAX/VMS Macro V04-00  
6-SEP-1984 10:43:26 [CORRTL.SRC]COBCVTQD.MAR;1

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(4)

BIAS  
BIAS DIGITS  
COB\$CVTQD R8  
DSC\$K CLASS - S  
DSC\$K DTTYPE - T  
OTSS\$CVT - T D

```

= 00000000 R 02
= 0000000A
= 00000006 RG 02
= 00000001
= 0000000E
***** X 00

```

+-----+  
! Psect synopsis !  
+-----+

PSELECT name

Allocation	PSECT No.	Attributes
00000000 ( 0.)	00 ( 0.)	NOPIC USR
00000000 ( 0.)	01 ( 1.)	NOPIC USR
00000072 ( 114.)	02 ( 2.)	PIC USR

## ! Performance indicators !

Phase  
----  
Initialization  
Command processing  
Pass 1  
Symbol table sort  
Pass 2  
Symbol table output  
Psect synopsis output  
Cross-reference output  
Assembler run totals

Page faults	CPU Time	Elapsed Time
29	00:00:00.07	00:00:01.13
123	00:00:00.30	00:00:02.27
140	00:00:01.23	00:00:05.34
0	00:00:00.09	00:00:00.93
48	00:00:00.36	00:00:02.29
3	00:00:00.01	00:00:00.02
2	00:00:00.01	00:00:00.01
0	00:00:00.00	00:00:00.00
347	00:00:02.09	00:00:12.00

The working set limit was 900 pages.

8720 bytes (18 pages) of virtual memory were used to buffer the intermediate code

There were 10 pages of symbol table space allocated to hold 135 non-local and 5 local symbols.

194 source lines were read in Pass 1, producing 10 object records in Pass 2.

194 source lines were read in Pass 1, producing 10 objects. 8 pages of virtual memory were used to define 7 macros.

-----+  
! Macro library statistics !  
-----+

### Macro Library name

### Macros defined

\$255\$D1A28:[SYSLIB]STABLE-MIB:2

6

190 GETs were required to define 6 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:COBCVTOD/OBJ=OBJ\$:COBCVTOD MSBCS:COBCVTOD/UPDATE=(ENH\$:COBCVTOD)

0061 AH-BT13A-SE  
VAX/VMS V4.0

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